GGCGGACTTAGGGAAAGGGCGTTCGGCTAGCGAGCTGTGGCCGCCGGCGGGCGGTGGGGACTCCAAGCACC
TTGACCCTGGCGCGAGGCGGCGTCGCGCACGCTTACAGGTGCCCGCGCGGGCTCGCGGCTCGGGCGCCCTC
CCGTTGGCCGAGAAGGAGGAGGGGGCCGTGTCGGCGTCCAGCCCCTCGCGCCCAGGATGGACGTGCCAGCC
AGGGTGTCCAGACGAGCGGCGGCGGCGGCGGCCAGGATGCTTCTGCGTACTGCCCGCGTCCCTCGCGAGTG
CTGGTTCCTGCCGACCGCGCTGCTCTGCGCCTACGGCTTCTTCGCAAACCTCCGGCCGTCGGAGCCGTTCC
TCACGCCCTACCTTCTGGGACCCGACAAGAACTTGACCGAGAGACAGGTCTACAATGAAATTTATCCGGTG
TGGACGTACTCTTACCTGCTGCTGCTGTTTCCCGTGTTCCTTGCCACAGACTACCTCCGGTACAAGCCTGT
CATCCTGCTGCAGGGACTCAGCCTGATTGTGACGTGGTTCATGCTGCTCTATGCCCAGGGACTGCTGGCCA
TTCAGTTCTTGGAATTCTTCTACGGCATCGCCACAGCCACCGAAATCGCCTACTACTCCTATATCTATACT
GTGGTGGACCTGGGCATGTACCAGAAAGTCACAAGCTACTGTAGAAGTGCCACCTTGGTGGGCTTTACAGT
GGGCTCCGTCCTAGGGCAGATCCTCGTCTCCGTGGTGGGCTGGTCACTGTTCAGCTTGAACGTCATCTCCC
TCACCTGTGTTTCTGTGGCTTTTGCTGTGGCCTGGTTTCTGCCTATGCCACAGAAGAGCCTCTTCTTTCAC
CACATTCCTTCCTCCTGTCATGGAGTGAACGGCCTCAAGGTACAAAACGGTGGCATCGTTACTGATACCCC
AGCAGCTAACCATCTTCCTGGATGGGAGGACATTGAGTCAAAAATCCCTCTAAATTTAGATGAGCCTCCGG
TGGAAGAACCGGAGGAGCCCAAGCCAGACCGGCTGCGGGTGTTCAGAGTCCTGTGGAATGACTTCCTGATG
TGTTATTCCTCCCGCCCTCTGCTCTGCTGGTCCGTGTGGTGGGCCCTGTCCACCTGCGGCTATTTCCAAGT
GGTGAACTACGCGCAGGGATTGTGGGAGAAGGTGATGCCTTCTCAGAATGCTGACATCTACAATGGCGGTG
TGGAGGCCGTTTCAACCTTGCTGGGTGCTAGTGCTGTGTTTGCAGTTGGCTATATAAAGCTATCTTGGTCA
ACTTGGGGAGAAATGACGTTGTTCCTGTGTTCTCTCCTGATTGCTGCTGCAGTGTATGTCATGGACACTGT
GCAGAGCATCTGGGTGTGCTATGCATCCTATGTTGTCTTCAGAATCATCTACATGGTACTCATCACCATAG
CAACTTTCCAGATTGCTGCGAACCTCAGCATGGAACGTTACGCCCTTGTGTTCGGCGTGAACACCTTCATT
GCCCTGGCATTGCAGACTCTGCTCACTCTGATTGTCGTGGATGCCAGGGGCCTTGGCTTATGTATCACCAC
TCAGTTCCTGATTTACGCCAGTTACTTCGCAGCCATCTCTGTGGTTTTCCTGGCGAATGGCATAGTCAGTA
TTATAAAGAAATGCAGAAAGCAGGAAGATCCCAGCTCCAGCCCCCAAGCCTCCACGTCCTAACGGGCTCCC
GAAGTGCTGCTGCTTCCAAGCAAGGATTTTGCACCGCAGCTGCTTGGATGTATTTAAACTCCTCATGGTTC
AGATAGCTATTTCTGAATGTATATTTCATGGCTTCAAAGCAGCTACTCAACTAACACCTTGCAGTCTTGGA
GTTAGTATAATACTGCTAAGAGAAGCCGGAAGCTTTTTTTTCTTGGATTGCTTATGAGCAGTAATTTAAGA
AAACCCACAAAACTTGATTGTGAAAAACCGAATAACCAAGCAGCGCGTCTGCTCTTTCCCTGATTCGCATG
TGACTGTGATGCTTTCCAGTCACATTCATCACGCACTCAGACCTGTGGCCTGGTGGGACCAGGGCTTCAGG
AGCCACAGGATGGTACAAGCCTCGACAGACACGTTCTGTCAGCACTTGCCCCGGCCACCTCATTCTGGTTT
CAGTGTTACTTGTGCGCATGTGTGTGTGTGTCTGCAGATGGAAATCATTCCCCACTGGCAGTATCTGCTCG
GGTTCAACGCTCTGTCCTCTGAGGAGTGTTGTGTCTGATTTTATTTTAAAAGTTCACGGTATGAGAGTTAG
TGCTTCTTCCCAATTTGACCGTTGTATATTTTTGGAAACGTTCTTTAGAATACATTTCTGCATTATTTGTA
TGCTTCCCAGAGAAGCTCATTTCATTACAAAAGGCACATTTTAAAGCCTGCTGATAACTGAGGAGGGCTAA
TGAGATAGGTTTGCTCGTCTGTAATAGTTATGTATGAAGGACTCTTAATTGCAACTGAAAAGGTCGTGTAT
AGGTTAGAGATACAGGGAGCCCATTTTATATTTGCATACCCTTTTATTTCCAAAACAAAATGAGCTCTTTT
CCCTTGAGACAATATCATTCCCATATACCTCTCATTGTCTTGGCTTTCTTATCCAAGACGAGAAGATATCA
GTCGGAACTGGATTATTCCACAGCCTTTTTATAAACTGAGCCTCTTCTTAATGATTGTTCTGGGCTTGGCA
GTAGGATAGACTTGATGCCTGCGTTTTGGACCTTAGACCTGCCCGCCTTCGTTCCTACAGTTAGATCATCT
TGAGAGATACTTAAAAGTATCTCCTCCTTACTTGAAAGAATGATGTTCTACATGCTAATATTTGTGAGACA
TGAAAACTATTTCAAAGCCAACTTTGTTGTCTTGTTGTATAAGAAATCTAGGTAGGTGCTTTCAACTAGAG
TGTTGACCTTGTTAAGACGGACGTAGCTGCACGGTATTCTCAATACTGAGATTGCAAAACTGAAGCTTGAC
AAGTGTGTGGAAGACCCTGGCTCAAGTTCCAGCACTGGAAAGACCAAAGTGCAAACGTGCATGGGAGGAGT
GAGGGTAACAGAGGCCATGGCGTACGTCTTCCTTTGCAGCTAGGGAAAGAGAAGAACACTAAGGAGATGGA
GAACTAAGGTCAGAGTAGCAGTCTCCAGTCTTACATTTTGGTCTCTTTCCTCCTATACTTCCTTGTTGCTC
TATAAGAAGTTGGTTGCCCAGAAACAAGAAGAAACATTGTGATTGCGAAGTGTCATTTTGTTTTTTTTTTA
AATAACATGTATTATGGCACAATCAAATTGTTCACATTACCAAAGCAATATTTCTTTGGGATTCAGTTCAG
TGTTTGTGGCATCTAATCTGATCCTTCTTTACGTGTCTAAATCAAGACTGTATCCACATTTTACCACGCGG
CCATACTTGCAGAATGCAGACCCTAGTGGGCTGTACTGTATGCACTTTGATGAAGACGTGAAAAGAATCTG
CTGTACTTTTTATTCAATCTGTATAGACTATAAAACTATTTTTATTAAATAAATATTTTACAGTAAAAAAA
AAAA (SEQ ID NO:1)

FIGURE 1

MDVPARVSRRAAAAAARMLLRTARVPRECWFLPTALLCAYGFFANLRPSEPFLTPYLLG
PDKNLTERQVYNEIYPVWTYSYLLLLFPVFLATDYLRYKPVILLQGLSLIVTWFMLLYA
QGLLAIQFLEFFYGIATATEIAYYSYIYTVVDLGMYQKVTSYCRSATLVGFTVGSVLGQ
ILVSVVGWSLFSLNVISLTCVSVAFAVAWFLPMPQKSLFFHHIPSSCHGVNGLKVQNGG
IVTDTPAANHLPGWEDIESKIPLNLDEPPVEEPEEPKPDRLRVFRVLWNDFLMCYSSRP
LLCWSVWWALSTCGYFQVVNYAQGLWEKVMPSQNADIYNGGVEAVSTLLGASAVFAVGY
IKLSWSTWGEMTLFLCSLLIAAAVYVMDTVQSIWVCYASYVVFRIIYMVLITIATFQIA
ANLSMERYALVFGVNTFIALALQTLLTLIVVDARGLGLCITTQFLIYASYFAAISVVFL
ANGIVSIIKKCRKQEDPSSSPQASTS (SEQ ID NO:2)

FIGURE 2

Sequenc Length: 3554 bp

S quence Del t d: from base 484 to base 526

b ld underlined t xt = deleted in gene sequence

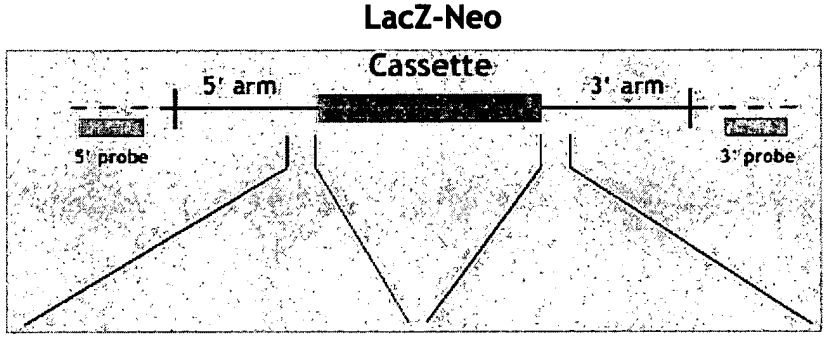
plain text = gene sequence flanking deleted sequence

GGCGGACTTAGGGAAAGGGCGTTCGGCTAGCGAGCTGTGGCCGCCGGCGGGCGGTGGGGACTCCAAGCACCTTGACCCTG
GCGCGAGGCGGCGTCGCGCACGCTTACAGGTGCCCGCGCGGGCTCGCGGCTCGGGCGCCCTCCCGTTGGCCGAGAAGGAG
GAGGGGGCCGTGTCGGCGTCCAGCCCCTCGCGCCCAGGATGGACGTGCCAGCCAGGGTGTCCAGACGAGCGGCGGCGGCG
GCGGCCAGGATGCTTCTGCGTACTGCCCGCGTCCCTCGCGAGTGCTGGTTCCTGCCGACCGCGCTGCTCTGCGCCTACGG
CTTCTTCGCAAACCTCCGGCCGTCGGAGCCGTTCCTCACGCCCTACCTTCTGGGACCCGACAAGAACTTGACCGAGAGAC
AGGTCTACAATGAAATTTATCCGGTGTGGACGTACTCTTACCTGCTGCTGCTGTTTCCCGTGTTCCTTGCCACAGACTAC
CTC**CGGTACAAGCCTGTCATCCTGCTGCAGGGACTCAGCCTGATTG**TGACGTGGTTCATGCTGCTCTATGCCCAGGGACT
GCTGGCCATTCAGTTCTTGGAATTCTTCTACGGCATCGCCACAGCCACCGAAATCGCCTACTACTCCTATATCTATACTG
TGGTGGACCTGGGCATGTACCAGAAAGTCACAAGCTACTGTAGAAGTGCCACCTTGGTGGGCTTTACAGTGGGCTCCGTC
CTAGGGCAGATCCTCGTCTCCGTGGTGGGCTGGTCACTGTTCAGCTTGAACGTCATCTCCCTCACCTGTGTTTCTGTGGC
TTTTGCTGTGGCCTGGTTTCTGCCTATGCCACAGAAGAGCCTCTTCTTTCACCACATTCCTTCCTCCTGTCATGGAGTGA
ACGGCCTCAAGGTACAAAACGGTGGCATCGTTACTGATACCCCAGCAGCTAACCATCTTCCTGGATGGGAGGACATTGAG
TCAAAAATCCCTCTAAATTTAGATGAGCCTCCGGTGGAAGAACCGGAGGAGCCCAAGCCAGACCGGCTGCGGGTGTTCAG
AGTCCTGTGGAATGACTTCCTGATGTGTTATTCCTCCCGCCCTCTGCTCTGCTGGTCCGTGTGGTGGGCCCTGTCCACCT
GCGGCTATTTCCAAGTGGTGAACTACGCGCAGGGATTGTGGGAGAAGGTGATGCCTTCTCAGAATGCTGACATCTACAAT
GGCGGTGTGGAGGCCGTTTCAACCTTGCTGGGTGCTAGTGCTGTGTTTGCAGTTGGCTATATAAAGCTATCTTGGTCAAC
TTGGGGAGAAATGACGTTGTTCCTGTGTTCTCTCCTGATTGCTGCTGCAGTGTATGTCATGGACACTGTGCAGAGCATCT
GGGTGTGCTATGCATCCTATGTTGTCTTCAGAATCATCTACATGGTACTCATCACCATAGCAACTTTCCAGATTGCTGCG
AACCTCAGCATGGAACGTTACGCCCTTGTGTTCGGCGTGAACACCTTCATTGCCCTGGCATTGCAGACTCTGCTCACTCT
GATTGTCGTGGATGCCAGGGGCCTTGGCTTATGTATCACCACTCAGTTCCTGATTTACGCCAGTTACTTCGCAGCCATCT
CTGTGGTTTTCCTGGCGAATGGCATAGTCAGTATTATAAAGAAATGCAGAAAGCAGGAAGATCCCAGCTCCAGCCCCCAA
GCCTCCACGTCCTAACGGGCTCCCGAAGTGCTGCTGCTTCCAAGCAAGGATTTTGCACCGCAGCTGCTTGGATGTATTTA
AACTCCTCATGGTTCAGATAGCTATTTCTGAATGTATATTTCATGGCTTCAAAGCAGCTACTCAACTAACACCTTGCAGT
CTTGGAGTTAGTATAATACTGCTAAGAGAAGCCGGAAGCTTTTTTTTCTTGGATTGCTTATGAGCAGTAATTTAAGAAAA
CCCACAAAACTTGATTGTGAAAAACCGAATAACCAAGCAGCGCGTCTGCTCTTTCCCTGATTCGCATGTGACTGTGATGC
TTTCCAGTCACATTCATCACGCACTCAGACCTGTGGCCTGGTGGGACCAGGGCTTCAGGAGCCACAGGATGGTACAAGCC
TCGACAGACACGTTCTGTCAGCACTTGCCCCGGCCACCTCATTCTGGTTTCAGTGTTACTTGTGCGCATGTGTGTGTGTG
TCTGCAGATGGAAATCATTCCCCACTGGCAGTATCTGCTCGGGTTCAACGCTCTGTCCTCTGAGGAGTGTTGTGTCTGAT
TTTATTTTAAAAGTTCACGGTATGAGAGTTAGTGCTTCTTCCCAATTTGACCGTTGTATATTTTTGGAAACGTTCTTTAG
AATACATTTCTGCATTATTTGTATGCTTCCCAGAGAAGCTCATTTCATTACAAAAGGCACATTTTAAAGCCTGCTGATAA
CTGAGGAGGGCTAATGAGATAGGTTTGCTCGTCTGTAATAGTTATGTATGAAGGACTCTTAATTGCAACTGAAAAGGTCG
TGTATAGGTTAGAGATACAGGGAGCCCATTTTATATTTGCATACCCTTTTATTTCCAAAACAAAATGAGCTCTTTTCCCT
TGAGACAATATCATTCCCATATACCTCTCATTGTCTTGGCTTTCTTATCCAAGACGAGAAGATATCAGTCGGAACTGGAT
TATTCCACAGCCTTTTTATAAACTGAGCCTCTTCTTAATGATTGTTCTGGGCTTGGCAGTAGGATAGACTTGATGCCTGC
GTTTTGGACCTTAGACCTGCCCGCCTTCGTTCCTACAGTTAGATCATCTTGAGAGATACTTAAAAGTATCTCCTCCTTAC
TTGAAAGAATGATGTTCTACATGCTAATATTTGTGAGACATGAAAACTATTTCAAAGCCAACTTTGTTGTCTTGTTGTAT
AAGAAATCTAGGTAGGTGCTTTCAACTAGAGTGTTGACCTTGTTAAGACGGACGTAGCTGCACGGTATTCTCAATACTGA
GATTGCAAAACTGAAGCTTGACAAGTGTGTGGAAGACCCTGGCTCAAGTTCCAGCACTGGAAAGACCAAAGTGCAAACGT
GCATGGGAGGAGTGAGGGTAACAGAGGCCATGGCGTACGTCTTCCTTTGCAGCTAGGGAAAGAGAAGAACACTAAGGAGA
TGGAGAACTAAGGTCAGAGTAGCAGTCTCCAGTCTTACATTTTGGTCTCTTTCCTCCTATACTTCCTTGTTGCTCTATAA
GAAGTTGGTTGCCCAGAAACAAGAAGAAACATTGTGATTGCGAAGTGTCATTTTGTTTTTTTTTAAATAACATGTATTA
TGGCACAATCAAATTGTTCACATTACCAAAGCAATATTTCTTTGGGATTCAGTTCAGTGTTTGTGGCATCTAATCTGATC
CTTCTTTACGTGTCTAAATCAAGACTGTATCCACATTTTACCACGCGGCCATACTTGCAGAATGCAGACCCTAGTGGGCT
GTACTGTATGCACTTTGATGAAGACGTGAAAAGAATCTGCTGTACTTTTTATTCAATCTGTATAGACTATAAAACTATTT
TTATTAAATAAATATTTTACAGTAAAAAAAAAAA

(SEQ ID NO:1)

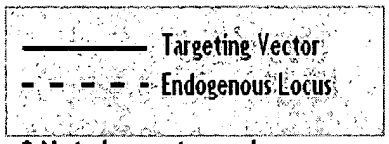
FIGURE 3

Targeting Vector*
(genomic sequence)



Arm Length:
5': 4.5 kb
3': 0.6 kb

5'>TTACTGTGGCCAGTATTTCTC	5'>TGACGTGGTTCATGCTGCTCT
CGGGGATAAGGGAGTGTTGGTGGG	ATGCCCAGGGACTGCTGGCCATTC
CTGTTTTGTAGGAATACATTCTTA	AGTTCTTGGAATTCTTCTACGGCA
TGGCTTGTCGGGTCTGTTGATCAC	TCGCCACAGCCACCGAAATCGCCT
TAACGAGCTTTCACTCTTCCTACC	ACTACTCCTATATCTATACTGTGG
AGGTCTACAATGAAATTTATCCGG	TGGACCTGGGCATGTACCAGAAAG
TGTGGACGTACTCTTACCTGCTGC	TCACAAGCTACTGTAGAAGTGCCA
TGCTGTTTCCCGTGTTCCTTGCCA	CCTTGGTGGGCTTTACAGTGGGCT
CAGACTACCTC<3'	CCGTCCTAGGG<3'
(SEQ ID NO:3)	(SEQ ID NO:4)



*** Not drawn to scale**

FIGURE 4

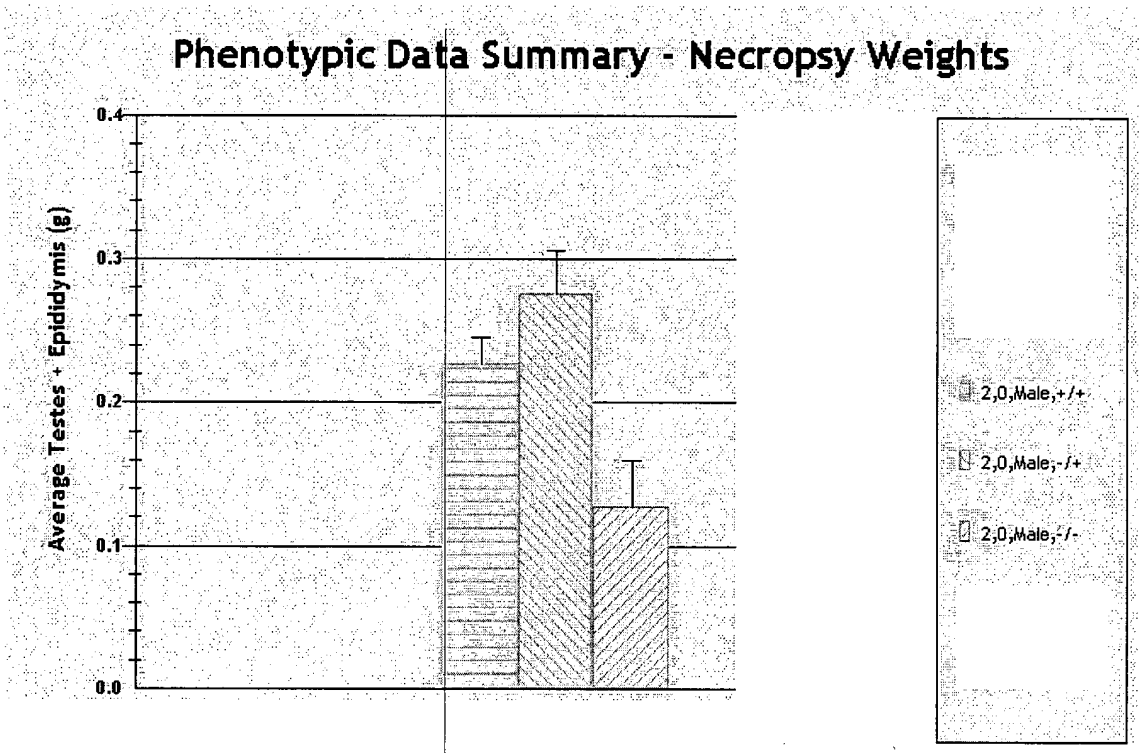

Phenotypic Data Summary - Necropsy Weights
Average Testes + Epididymis (g)
0.4
0.3
0.2
0.1
0.0
2,0,Male,+/+
2,0,Male,-/+
2,0,Male,-/-

FIGURE 5

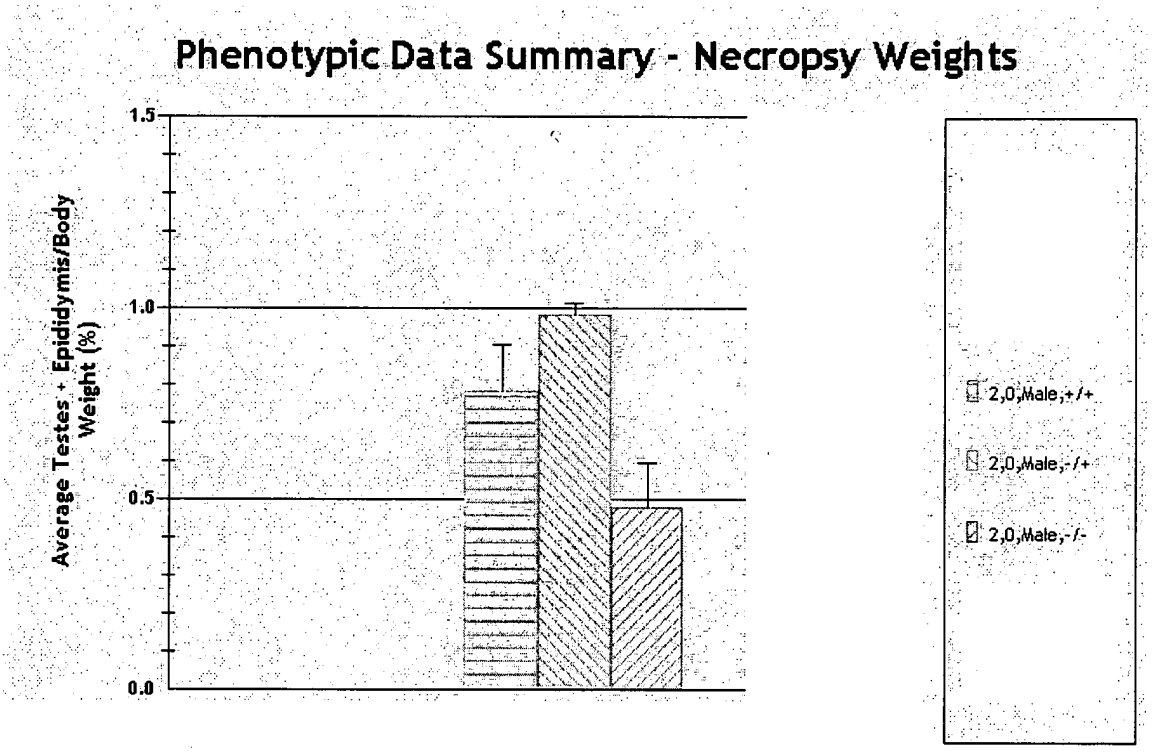

Phenotypic Data Summary - Necropsy Weights
Average Testes + Epididymis/Body Weight (%)
1.5
1.0
0.5
0.0
2,0,Male,+/+
2,0,Male,-/+
2,0,Male,-/-

FIGURE 6